MANUFACTURING SERVICES FACILITIES

PURPOSE:

To manufacture hardware for research, development, and space flight with high standards of quality routinely met for in-process inspection, certification, as-built configuration control, and flight hardware traceability.

Machine Shop Facility

The Machine Shop performs all in-house fabrication for the Center. This includes flight hardware, prototype construction, and feasibility review of concepts. The facilities include a sheet metal shop, a welding shop, a plating facility, electronics assembly, and a sand blast facility.

Sheet Metal Facility

The Sheet Metal Shop includes bending, shearing, bonding, cutting, drilling, rolling, tube bending, flex hose fabrication, and assembly work. The Sheet Metal Shop has 100k clean room facilities for both bonding and assembly operations.

Welding and Heat Treatment Facility

The Weld Shop contains various manual welding equipment for welding aluminum, mild steel, stainless steel, and refractory materials. The Weld Shop also has a completely CNC variable polarity plasmas arc (VPPA) welding system; a high vacuum electron beam welding system capable of welding components up to 1 inch thick under high vacuum; and a resistance seam welder capable of performing both continuous roll seam and single spot welds. The heat treating facility houses four heat treat furnaces ranging in temperature from 150 to 2000 degrees F. This facility also has endothermic and exothermic atmosphere generators, a 100-ton hydropress, two oil quech tanks, and one water quench tank. This facility provides heat treating processes for development, flight, and test hardware in support of all NASA enterprises.

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Surface Treatment Electroplating and Painting Facility

The facility for Surface Treatment, Electroplating and Painting houses a variety of tanks used for cleaning and degreasing hardware, chromate conversion coating and deoxidizing aluminum alloys, pickling and passivating stainless steels, and de-rusting and phosphating mild steel. In addition, this facility contains sand and bead blasting equipment. The plating facility can perform chrome, copper, bright nickel, sulfamate nickel, electroless nickel, cadmium, and gold plating. Also performed are types I, II, and III anodizing and dyeing of aluminum; electropolishing of stainless steel and copper alloys; black oxide coating of stainless steel and mild steels; and bright dipping and electrocleaning of various metals and alloys. The paint facility consists of two large and one small paint booths. They are used for priming and painting development, flight, and test hardware using various types of coatings such as polyurethane, epoxies, and enamels.

Precision Cleaning Facility

The Precision Cleaning Facility is used for processing hardware that requires a high degree of cleanliness. The strenuous requirements of MSFC-SPEC-164B, Class I, II, and III, Level A, B, or C, and MIL-STD-1246C, Level 250 to 1000. This facility contains three cleaning consoles capable of cleaning stainless steel and aluminum tubing up to 1.5 inches in diameter, an ultrasonic cleaner, three parts washers, one jet washer, one vapor degreaser, and one vacuum drying oven. This facility is classified as a 30K clean room.

MANUFACTURING SERVICES FACILITIES

Electrical Shop

The Electrical Shop is housed in a 3,500 sq. ft. environmentally controlled work area used for fabricating and assembling electrical and electronic boards, boxes and cables. The shop contains a screen printer and solder reflow oven for soldering surface mount components on PC boards. Additional capabilities include coil and transformer winding, conformal coating, staking, plated thru-hole board soldering and electrical potting processes. Component identification is also performed in this area. This shop is used in the development and fabrication of flight and non-flight hardware in support of all NASA enterprises.

Precision Assembly

The Precision Assembly Shop is housed in a 2,800 sq. ft. 100K clean room environment used for assembling mechanical parts into completed mechanical assemblies and sub-assemblies. The assembly machinist receives precision cleaned and bagged parts and assembles the parts per detailed drawings and specifications using tools and fixtures as required. The precision assembly operation supports many NASA enterprises, the most recent of which has been the Environmental Control and Life Support System (ECLSS) and g-LIMIT projects.

Sandblast Facility

The Sandblast Facility consists of two structures; one of which is the blast building where the actual blasting takes place. The blast building is a two-sided shed approximately 45 feet wide and 60 feet long with a roof height of 19 feet. The other structure is a section of a Saturn V Rocket fuel tank, which has been converted to store the blast media and equipment. A diesel compressor operates the grit blaster and breathing air for the operator. The facility is used for various types of grit blasting media to meet specific requirements depending upon whether the parts will be surface treated, plated or painted. We have used sand, garnet, iron oxide, coal slag, steel shot, walnut hulls as a blasting media. This facility is used in the development and fabrication of flight and non-flight hardware in support of all the NASA enterprises.

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